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Docket No.: U2054.0147
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Yasuhiko Matsunaga

Application No.: 10/737,118

Confirmation No.: 6044

Filed: December 17, 2003

Art Unit: 2618

For: RADIO RESOURCE MANAGEMENT
METHOD, MANAGEMENT APPARATUS
EMPLOYING THE SAME, BASE STATION,
AND TERMINAL

Examiner: M. Milord

AMENDMENT AFTER FINAL ACTION UNDER 37 C.F.R. 1.116

MS AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

INTRODUCTORY COMMENTS

In response to the Office Action dated November 12, 2009, please amend the above-identified U.S. patent application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 3 of this paper.

Remarks/Arguments begin on page 10 of this paper.

FEE CALCULATION

Any additional fee required has been calculated as follows:

	Claims Remaining After Amendment	Highest Number Previously Paid	Number Extra Claims Present	Rate	Additional Fee
Total	18	- 46* =	0	x \$52.00	0.00
Independent	11	- 22** =	0	x \$220.00	0.00
First presentation of Multiple Dependent Claim(s) (if applicable)					
TOTAL					0.00

*not less than 20

** not less than 3

In the event the actual fee is greater than the payment submitted or is inadvertently not enclosed or if any additional fee during the prosecution of this application is not paid, the Patent Office is authorized to charge any underpayment or credit any overpayment to Deposit Account No. 50-2215.

CONTINGENT EXTENSION REQUEST

If this communication is filed after the shortened statutory time period had elapsed and no separate Petition is enclosed, the Commissioner of Patents and Trademarks is petitioned, under 37 C.F.R. § 1.136(a), to extend the time for filing a response to the outstanding Office Action by the number of months which will avoid abandonment under 37 C.F.R. § 1.135. The fee under 37 C.F.R. § 1.17 should be charged to our Deposit Account No. 50-2215.

AMENDMENTS TO THE CLAIMS

1. – 2. (Canceled)

3. (Previously presented) A radio resource management method comprising the control steps of:

detecting the occurrence of interference between service areas provided by plural radio base stations;

controlling transmission power of a common control signal, which governs a scope of a service area that a radio base station forms, for interference suppression in response to said occurrence of interference between service areas provided by plural radio base stations;

detecting the occurrence of interference based on radio link quality information notified from each of said radio base stations;

wherein said radio link quality information comprises at least a radio link reception level; and

wherein said control step comprises the step of controllably reducing the transmission power of a radio base station, of which a reception level exceeds a predetermined threshold value and a current transmission power is more than a lower limit value, of radio base stations using the same frequency as a frequency currently used by said radio base station.

4. – 5. (Canceled)

6. (Previously presented) A radio resource management apparatus comprising:
a detector for detecting the occurrence of interference between service areas provided by plural radio base stations; and

a controller for controlling transmission power of a common control signal, which governs a scope of a service area that a radio base station forms, for interference suppression in response to said occurrence of interference between service areas provided by plural radio base stations;

wherein the occurrence of interference is detected based on radio link quality information notified from each of said radio base stations; and

wherein said radio link quality information comprises at least a radio link reception level; and wherein said controller comprises means for controllably reducing the transmission power of a radio base station, of which a reception level exceeds a predetermined threshold value and a current transmission power is more than a lower limit value, of radio base stations using the same frequency as a frequency currently used by said radio base station.

7. (Previously Presented) A radio base station in a radio communication system, said radio communication system including plural radio base stations each which provides a service area and a radio resource management apparatus for managing radio resources of said radio base stations, comprising:

means for measuring a radio link quality and then notifying a radio resource management apparatus of radio link quality information being a measurement result; and

means for responding transmission power control issued from said radio resource management apparatus and then controllably changing transmission power of a common control signal, which governs a scope of service area that a radio base station forms, to suppress interference between service areas detected based on said measurement result in said radio resource management apparatus.

8. (Original) The radio base station defined in Claim 7, wherein said notification means performs a notification operation at predetermined notification intervals.

9. (Original) The radio base station defined in Claim 8, wherein when said radio link quality exceeds a predetermined threshold value, said notification interval is set longer than said threshold value.

10. (Original) The radio base station defined in Claim 8, wherein when a distribution value of a radio link quality measured within a fixed period exceeds a predetermined threshold value, said notification interval is set longer than said threshold value.

11. (Canceled)

12. (Currently amended) A [[The]] radio resource management method defined in Claim 11, further comprising the steps of:

detecting the occurrence of interference between service areas provided by plural radio base stations;

controlling transmission power of a common control signal, which governs a scope of a service area that a radio base station forms, to suppress the interference autonomously by each of said plural radio base stations;

measuring information on a radio link quality in each of said radio base stations and then mutually notifying other radio base stations of measured information; and

controllably reducing the transmission power thereof when a radio base station providing a maximum interference to other stations is specified based on said radio link quality information notified.

13. (Original) The radio resource management method defined in Claim 12, wherein, when said maximum interference amount exceeds a predetermined value, said transmission power is reduced controllably.

14. (Canceled)

15. (Currently amended) A [[The]] radio base station defined in Claim 14, further comprising:

detector for detecting the occurrence of interference between service areas provided by plural radio base stations;

controller for controlling transmission power of a common control signal, which governs a scope of service area that a radio base station forms, to suppress interference autonomously in response to said occurrence of interference between plural service areas;

means for measuring information on a radio link quality and then mutually notifying other radio base stations of measured information; and

means for controllably reducing transmission power when a maximum interference is provided to other station based on the radio link quality information notified from other radio base station.

16. (Original) The radio base station defined in Claim 15, when said maximum interference amount exceeds a predetermined value, said transmission power is reduced controllably.

17. – 23. (Canceled)

24. (Currently amended) A [[The]] radio resource management method defined in Claim 23 comprising the steps of:

receiving information of radio link qualities from plural radio terminals; and
controlling transmission power of a radio base station based on said information of radio link qualities from plural radio terminals,

wherein said radio link quality information has a reception level from a neighboring radio base station measured by each of said radio terminals; and wherein said control step comprises the step of controlling transmission power of said radio base station based on the sum of reception levels from neighboring radio base stations of the same frequency as the frequency used by an interested radio base station.

25. (Original) The radio resource management method defined in Claim 24, wherein said control step comprises the step of controllably reducing a transmission power of a base station where the sum of said reception levels exceeds a predetermined threshold value and the current transmission power is more than a lower limit value.

26. (Canceled)

27. (Currently amended) A [[The]] radio resource management apparatus defined in Claim 26 comprising:

receiver for receiving information of radio link qualities from plural radio terminals; and

controller for controlling transmission power of a radio base station based on said information of radio link qualities from plural radio terminals,

wherein said radio link quality information has a reception level from a neighboring radio base station measured by each of said radio terminals; and wherein said control means comprises the step of controlling transmission power of said radio base station based on the sum of reception levels from neighboring radio base stations of the same frequency as the frequency used by an interested radio base station.

28. (Original) The radio resource management apparatus defined in Claim 27, wherein said controller comprises means of controllably reducing the transmission power of a base station where the sum of said reception levels exceeds a predetermined threshold value and the current transmission power is more than a lower limit value.

29. (Canceled)

30. (Currently amended) A [[The]] radio resource management method defined in Claim 29 comprising the steps of:

receiving information of radio link qualities from plural radio terminals; and controllably changing a frequency used by a radio base station based on said information of radio link qualities from plural radio terminals,

wherein said radio link quality information has a reception level from a neighboring radio base station measured by each of radio terminals; and wherein said control step comprises the step of controlling the frequency of said radio base station based on an interference amount being an average value of reception levels from neighboring radio base stations of the same frequency as the frequency used by an interested radio base station.

31. (Canceled)

32. (Currently amended) A [[The]] radio resource management apparatus defined in claim 31 comprising:

a controller that changes a frequency used by a radio base station based on radio link quality information provided by plural radio terminals,

wherein said radio link quality information has a reception level from a neighboring radio base station measured by each of said radio terminals; and

wherein said controller controls the frequency of the radio base station based on an interference amount being an average value of reception levels from neighboring radio base stations of the same frequency as the frequency used by an interested radio base station.

33. – 34. (Canceled)

35. (Currently amended) A [[The]] radio terminal defined in Claim 33 comprising:
means for measuring a radio link quality and then notifying a radio resource management apparatus of radio link quality information being the measurement result, the notifying means performing a notifying operation at predetermined notification intervals; and

means for responding distributed control indication for a load being a radio terminal accommodated in a radio base station, based on said radio link quality information, said distributed control indication being created from said radio resource management apparatus, and switching a radio base station to be connected,

wherein when a radio link quality exceeds a predetermined threshold value, said notification interval is set longer than that in the case of less than said threshold value.

36. (Currently amended) A [[The]] radio terminal defined in Claim 33 comprising:
means for measuring a radio link quality and then notifying a radio resource management apparatus of radio link quality information being the measurement result, the notifying means performing a notifying operation at predetermined notification intervals; and

means for responding distributed control indication for a load being a radio terminal accommodated in a radio base station, based on said radio link quality information, said distributed

control indication being created from said radio resource management apparatus, and switching a radio base station to be connected,

wherein when a distribution value of a radio link quality measured within a fixed period exceeds a predetermined threshold value, said notification interval is set longer than that in the case of less than said threshold value.

37. – 46. (Canceled)

REMARKS

By this Amendment, claims 12, 15, 24, 27, 30, 32, 35 and 36 have been amended, and claims 11, 14, 20, 23, 26, 29, 31, 33, 38-40, 42-43 and 46 have been cancelled. Accordingly, claims 3, 6-10, 12-13, 15-16, 24-25, 27-28, 30, 32 and 35-36 are pending in the present application.

Applicant wishes to thank the Examiner for the indication of allowance of claims 3 and 6-10, and the indication of allowable subject matter in claims 12-13, 15-16, 24-25, 27-28, 30, 32 and 35-36. In response, Applicant has cancelled rejected claims 11, 14, 20, 23, 26, 29, 31, 33, 38-40, 42-43 and 46, and amended claims 12, 15, 24, 27, 30, 32, 35 and 36 to be in independent form. Accordingly, all art rejections have been rendered moot.

In view of the foregoing, favorable consideration of the amendments to claims 12, 15, 24, 27, 30, 32, 35 and 36, and allowance of the present application with claims 3, 6-10, 12-13, 15-16, 24-25, 27-28, 30, 32 and 35-36 is respectfully and earnestly solicited.

Dated: February 12, 2010

Respectfully submitted,

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